UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,913	09/15/2003	Jiann-Chen Chen	N81438/LPK	1253

1333 7590 10/10/2006

PATENT LEGAL STAFF
EASTMAN KODAK COMPANY
343 STATE STREET
ROCHESTER, NY 14650-2201

EXAMINER	
TSOY, ELENA	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/662,913	CHEN ET AL.	
	Examiner	Art Unit	
	Elena Tsoy	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 16-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/15/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Election/Restrictions

1. Applicant's election without traverse of Claim 14 in the reply filed on September 21, 2006 is acknowledged. Claim 15 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

Claim Objections

2. Claim 1 is objected to because of the following informalities: "nickel sleeve having an inside and an outside and a coefficient of thermal expansion" should be changed to "nickel sleeve having an inside and an outside ~~and a coefficient of thermal expansion~~" because all materials have "coefficient of thermal expansion".

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-14, and 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 19 recite a phrase "high temperature nickel" renders the claim indefinite because the exact meaning of the phrase is not clear.

Claims 17 and 18 recite the limitation " The method of claim 1, wherein said cured thermoplastic polymer " in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites the limitation "the base cushion elastomner" in 7. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-14, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art in view of Weber et al (US 5,750,160).

It is well settled that drafting a claim in **Jepson** format (Claim 19) is taken as an implied admission that the subject mater of the preamble is the prior art work of another. In re Fout, 675 F.2d 297, 301, 213 USPQ 532, 534 (CCPA 1982) (holding preamble of Jepson-type claim to be admitted prior art where applicant's specification credited another as the inventor of the subject matter of the preamble).

Applicants discloses that the *improvement* comprises forming the mandrel of a metal having a coefficient of thermal expansion equal to from about 80 to about 120 percent of the coefficient of thermal expansion of the sleeve in a temperature range from about 20 to about 325^0C.

Weber et al teach that nickel shell formed on aluminum alloy mandrel by nickel vapour deposition tend to warp when cooled because nickel and aluminum have different coefficients of expansion and composites of nickel and aluminum. However, nickel vapour deposition on *steel*

mandrels, which have essentially the same coefficient of thermal expansion, permits the deposition of a nickel shell onto a steel substrate, which is free of distortion such as warping when **heated or cooled** (See column 1, lines 37-50). It is noted that a *fuser* member is subjected to heating and cooling in the range of 20 to about 325^{0}C while operating.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a mandrel of prior art of a material having essentially the same coefficient of thermal expansion as a nickel sleeve e.g. a steel or nickel with the expectation of preventing distortion such as warping when heated or cooled, as taught by Weber et al.

As to claims 4, 7, obviously mandrel of Applicants' admitted prior art in view of Weber et al having substantially the same coefficient of thermal expansion as nickel sleeve may be made from *nickel* to meet the requirement.

As to claim 14, it is well known in the art that an article can be separated from a mandrel by selectively cooling or heating either the article or the mandrel because one would either shrink or expand while another would stay unchanged.

7. Claims 1-14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art in view of Weber et al, Hartley et al (US 4,853,737) and Chen et al.

Applicants admitted that the current invention is directed to improvements in the fabrication process of replaceable fuser members for fuser rollers in electrophotographic applications whereby good adhesion is provided between the layers of cured material including the member and whereby increased ease of installation and reduced replacement (See specification, page 4, lines 8-15). An improvement includes mounting a high temperature nickel sleeve on a mandrel configured to receive the sleeve over the outside of the mandrel: applying a coating of a primer including a silane coupling agent containing epoxies to the outside of the sleeve; applying a

coating of a base cushion elastomer around the outside of the sleeve; curing the base cushion elastomer; machining the cured base cushion elastomer to a desired thickness; applying a topcoat layer over the machined base cushion; curing the topcoat layer and removing the replaceable fuser member from the mandrel; the improvement including: forming the mandrel of a metal having a coefficient of thermal expansion equal to from about 80 to about 120 percent of the coefficient of thermal expansion of the sleeve in a temperature range from about 20 to about 325^{0}C (See specification, page 5, lines 1-15). In other words, according to Applicants, prior art fails to teach that: (i) mandrel is of a metal having a coefficient of thermal expansion equal to from about 80 to about 120 percent of the coefficient of thermal expansion of the *nickel* sleeve; (ii) to use a primer including a silane coupling agent containing epoxies on the outside of the sleeve; (ii) curing the base cushion elastomer and machining to desired thickness; (iv) applying a topcoat onto the machined base cushion elastomer and curing the topcoat (Claim 1).

As to (i), Weber et al are applied here for the same reasons as above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a mandrel of prior art of a material having essentially the same coefficient of thermal expansion as a nickel sleeve e.g. a steel or nickel with the expectation of preventing distortion such as warping when heated or cooled, as taught by Weber et al.

As to (ii)-(iv), Hartley et al teach that a fuser can be made by applying to a cylindrical core (claimed sleeve) of **any** metal, e.g. steel, various alloys (See column 7, lines 60-64) a coating of **any** well known adhesive or primer available for adhering fluoroelastomers to metals (See column 8, lines 14-17) to the outside of the sleeve; applying a coating of polydimethylsiloxane elastomer (claimed base cushion elastomer) around the outside of the sleeve; curing the base cushion elastomer to provide a resilient underlayer having a dry thickness of **2.5 millimeters**; *grinding*

(claimed machining the cured base cushion elastomer) the surface of the cured elastomer layer (to a desired thickness) (See column 10, lines 54-63); applying a topcoat layer over the ground base cushion; curing the topcoat layer in stages, where the temperature of the composition is ramped (gradually raised) from about 20^0C to about 230^0C over a period of about 12 to 24 hours and then cured at that temperature or slightly higher, e.g., 232^0C for about 24 hours (See column 8, lines 25-34). The topcoat is made of a composition comprising uncured fluoroelastomer base polymer such as (random thermoplastic) copolymer (See column 2, lines 66+; column 11, lines 40-43), *amino* group containing polydiorganosiloxane oligomer (claimed aminosiloxane) (See column 2, lines 48-51; column 11, lines 52-55), fillers such as zinc oxide (See column 6, lines 44-46), oxides of *alloys* of antimony, tin (claimed antimony-doped tin) (See column 6, lines 45-46) and curing agents such as bisphenol curing agent (See column 3, lines 9-10). Hartley further teaches that one skilled in the art can compare the release of various cured fluoroelastomers containing the metal oxides to determine the optimum metal oxide or **combination** thereof and concentrations thereof (See column 6, lines 49-53). Chen et al teach that a fluoroelastomer layer may be adhered to a metal core aluminum, **nickel**, or steel via a primer layer (See column 4, lines 17-34) that improves adhesion between the metal and the polymeric material (See column 4, lines 63-65). Primers for the application of fluoroelastomers, fluorosilicone rubbers and silicone rubbers to metal are known in the art and include silane coupling agents, which can be either epoxy-functionalized or amine-functionalized epoxy resins, such as commercially available Thixon 300 and Thixon 311 primers for fluoroelastomers (See column 5, lines 1-13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made a prior art fuser roll by applying to a *nickel* sleeve an epoxy-functionalized silane coupling agent as a primer, as taught by Chen et al, a cushion layer, cured the cushion layer,

machined the cured layer, applied a top coat of a composition comprising a thermoplastic fluorocarbon random copolymer containing a bisphenol curing agent residue, a particulate filler containing zinc oxide or a mixture of zinc oxide and antimony-doped tin oxide and an aminosiloxane, as taught by Hartley et al, because Applicants refer to any prior art methods.

As to claims 2-3, the specification as filed describes the recited silanes as being commercially available primers (See specification, page 7, line 17-19), i.e. limitations of these dependent claims are not subject matter of claimed invention. Or it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used commercially available claimed epoxy silanes since Chen et al do not limit their teaching to specific epoxy silanes.

As to claims 4, 7, obviously mandrel of Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al having substantially the same coefficient of thermal expansion as nickel sleeve may be made from *nickel* to meet the requirement.

As to claim 6, It is the Examiner's position that prior art sleeve and a cushion layer would have thickness in claimed range of 0.001- 0.05 inches or it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant thickness parameters (including those of claimed invention) in Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al through routine experimentation in the absence of showing of criticality.

8. Claims 1-14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/, further in view of Badesha et al (US 5,141,788).

Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/ are applied here for the same reasons as above. Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/ does not expressly teach that the cured base cushion elastomer is machined to desired thickness (Claim 1).

Badesha et al teach that a fuser roll can be made by priming a suitable base member 4 which is a hollow cylinder or core fabricated from any suitable metal such as aluminum, steel, nickel, copper, and the like, having a suitable heating element 6 disposed in the hollow portion thereof (See column 7, lines 7-16) with an epoxy adhesive such as Thixon 300/301 (See column 10, lines 15-18), applying elastomer layer 2 (See Fig. 1; column 7, lines 11-12) including thermoplastic fluoropolymers (See column 8, lines 1-17), curing and post curing for 2 hours at 200^0F, two hours at 300^0F, two hours at 350^0F, two hours at 400^0F, sixteen hours at 450^0F and **grinding the Viton fluoroelastomer coating to a 3 inch diameter specification (claimed machining to a desired thickness)**, and applying and curing a topcoat layer at 200^0C(See column 10, lines 26-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have ground a cured cusion elasomer layer in Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/ to a desired thickness, as taught by Badesha et al.

9. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/, further in view of Petropoulos et al (US 5021109).

Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/ does not expressly teach that sleeve is of the same material as the machine mandrel, i.e. mandrel is of nickel.

Petropoulos et al teach that typical mandrel materials include metals such as aluminum, stainless steel, **nickel**, chromium, copper, brass, and the like (See column 5, lines 33-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a nickel mandrel in Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/ because Petropoulos et al teach that typical mandrel materials include metals such as aluminum, stainless steel, **nickel**, chromium, copper, brass, and the like.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/, further in view of Mikkelsen (US 6,071,110).

Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/ is applied here for the same reasons as above. Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/ does not expressly teach that the sleeve is removed from the mandrel by selectively cooling the mandrel.

However, Mikkelsen teaches that difference in coefficient of thermal expansion upon cooling or heating may be used to separate sleeves from mandrels, as evidenced by (See column 5, lines 41-49). Obviously, sleeves can be separated from mandrels in Applicants' admitted prior art in view of Weber et al, Badesha et al and Chen et al upon cooling or heating either a mandrel or

sleeve, even though their coefficients of thermal expansion are substantially the same because one would either shrink or expand while another would stay unchanged..

11. Claim 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/, further in view of Schlueter, Jr. et al (US 5,995,796).

Applicants' admitted prior art in view of Weber et al/Applicants' admitted prior art in view of Weber et al, Hartley et al and Chen et al/ does not expressly teach that filler is antimony-doped tin oxide. Hartley further teaches that one skilled in the art can compare the release of various cured fluoroelastomers containing the metal oxides to determine the optimum metal oxide or combination thereof and concentrations thereof (See column 6, lines 49-53). Hartley fails to teach that the optimum metal oxide combination contains antimony doped tin oxide; and curing time for the coating composition at temperature.

However, Schlueter, Jr. teaches that antimony doped tin oxides (See column 4, line 7) (optionally) in a combination with other metal oxides such as zinc oxide (See column 4, lines 57-67; column 12, lines 4, 8)) added to a fluoroelastomer/aminosiloxane copolymer allows for a stable resistivity virtually unaffected by changes in relative humidity and temperature and provides optimal conductivity (See column 10, lines 25, 40-68) for the filled copolymer (See column 4, lines 1-67; column 5, lines 1-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used antimony doped tin oxides in a combination with zinc oxide for filling a fluoroelastomer/aminosiloxane copolymer of Hartley with the expectation of providing the desired stable resistivity and optimal conductivity, as taught by Schueter, Jr.

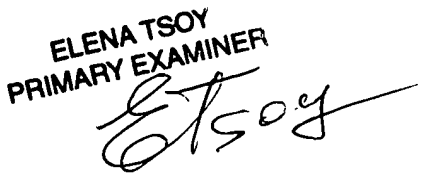
Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Thursday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy
Primary Examiner
Art Unit 1762



October 1, 2006